



Video

FULL DETAILS AND TRANSCRIPT

Formative Assessment

Lynn S. Fuchs, Ph.D. • June 2008

Topic: National Math Panel: Critical Foundations for Algebra
Practice: Mastery Framework

Highlights

- Overview of the major purposes of formative assessment
- Types of formative assessment, including informal and formal approaches
- Explanation of terminology that can be confusing
- The contrast between two types of objective formative assessment
- Issues associated with single skill assessments
- Optimal ways for teachers to use assessment data
- The value of using formative assessment to identify needs and tailor instruction for individuals and groups
- Usefulness of computers in managing systematic assessment data
- The need for professional development to help teachers learn how to implement a formative assessment system, interpret the data, and connect the results to instructional decision-making

About the Interviewee

Lynn S. Fuchs is the Nicholas Hobbs Professor of Special Education and Human Development at Vanderbilt University, where she also co-directs the Kennedy

Center Reading Clinic. She has conducted programmatic research on assessment methods for enhancing instructional planning and on instructional methods for improving reading and math outcomes for students with learning disabilities. Dr. Fuchs has published more than 200 empirical studies in peer-review journals. She sits on the editorial boards of 10 journals including the *Journal of Educational Psychology*, *Scientific Studies of Reading*, *Elementary School Journal*, *Journal of Learning Disabilities*, and *Exceptional Children*. She been identified by Thompson ISI as one of 250 “most highly cited” researchers in the social sciences, and has received a variety of awards to acknowledge her research accomplishments that have enhanced reading and math outcomes for children with and without disabilities. Her awards include the Council for Exceptional Children’s Career Research Award; Vanderbilt University’s Joe B. Wyatt Distinguished University Professor; Vanderbilt’s Earl Sutherland Award for Research Accomplishments; the American Education Research Association’s Distinguished Researcher Award from the Special Education Research SIG; the 2001 Article of the Year Award for best article in the 2000 volume year in *School Psychology Review*; the 2000 Council for Exceptional Children/Division of Learning Disabilities Samuel A. Kirk Award for the exemplary practice article from the 1998 volume of *Learning Disabilities Research and Practice*; the 2000 Alumni Distinguished Faculty Scholar Award, awarded by the Peabody Alumni Board of Vanderbilt University; the 1998 American Educational Research Association’s Palmer O. Johnson Award for the outstanding article appearing in an AERA-sponsored journal for the 1997 volume year; the 1998: Mayor’s Educator of the Year Award (Nashville, TN); the 1997 Learned Article Award from the Educational Press Association; and the 1996 *School Psychology Quarterly*/American Psychological Association Division 16 Fellows Award for Best Articles.

Full Transcript

My name is Lynn Fuchs. I am the Nicholas Hobbs Professor of Special Education and Human Development at Vanderbilt University.

Over the past 25 years, I have been working with my colleagues to develop effective classroom practices in the areas of math and reading. Across general and targeted interventions, what we are doing, in a big way, is assessing ways to use formative assessment to track students’ responsiveness to the programs they are receiving, and also to use formative assessment to help teachers tailor programs more responsively to children’s needs.

Formative assessment is used for two major purposes: One purpose is to quantify a student’s responsiveness to the instruction that they are receiving; and then the second way, that we use formative assessment, is to use the data that teachers collect, in a systematic way, to experiment with different instructional components to determine what exactly is working for a specific individual student.

There are different kinds of formative assessments: Some are more informal—where teachers are on an online basis watching children as they solve math problems, or listening to children, as they explain their understanding of the math concepts. The other kind of formative assessment is more systematic and

objective, and relies on formal but brief tests—even graphing students’ performance over time, looking at slopes of improvement, and looking at skills analyses based on the child’s performance.

But even within the more objective systematic formative assessment, there is confusing terminology for people to get up to speed on. For one, one type of formative assessment is called Mastery Measurement. And with Mastery Measurement, what a teacher does, is think about the sequence or hierarchy of skills that she is going to teach over the course of an academic year. And she makes a list of skills, and kind of orders them, and for each skill in the hierarchy, she develops a criterion-referenced test. People have identified some problems in a Mastery Measurement framework for conducting formative assessment and some of the problems, some of the big problems are that when children take single skill tests—so that they know, for example, that every item on that test is going to require adding with regrouping—some children can do those problems—adding with regrouping—but then you give them a test with lots of different kinds of items; or you put them out in the real world where they have to decide whether adding is appropriate or subtracting is appropriate, they can’t do those problems. So sometimes, single skill assessments can be misleading, and that’s very different also, from how high stakes tests are where children are presented with many different kinds of problems, all mixed-up.

The second approach to objective formative assessment is what’s known as Curriculum Based Measurement. Now, Curriculum Based Measurement is different from Mastery Measurement because you might take the exact same objectives—the objectives that are in the curriculum—but every assessment that’s administered, so every week or every month is taking all the different kinds of problems that the student is expected to learn at that grade level. And the advantage, of Curriculum Based Measurement, is that—because every test samples the annual curriculum, we are not relying on single skill testing, okay, so children come to a problem they have to figure out, “What kind of problem is this? How do I solve it?” And also, the tests look a lot more like, and are structured a lot more like, the high stakes tests by which the schools are judged at the end of the year.

So the research on formative assessment actually contrasts different ways of using formative assessment; and so we know some information about optimal ways for teachers to use formative assessment. We know that, for students who are not at risk for poor learning outcomes, that formative assessment can be used less frequently—so maybe four times a year or monthly. But for students who look like they are at risk for developing difficulties in the area of mathematics, we know that monitoring progress, at least weekly, is important for teachers to have timely information, by which they can determine whether the instructional program that they are implementing is working well for that child, or whether they need to revise the instructional program. And if so, they use the formative assessment data to help them figure out how to revise that program.

We also know that computers can be very helpful to teachers in using systematic formative assessment data. So for example, there are some computer programs that will actually automatically collect student performance data while the children are working at the computer, and score the data and manage the

data for the teacher. We know, for example, that having graphed displays that quantify a child's overall developing competence in the mathematics program can be used productively and that computers can quickly display that and apply decision-rules back to teachers about which children in their classrooms require some change in their instructional programs. We also can derive from the data descriptions of students' strengths and weaknesses within the annual curriculum; and we can report that back to teachers with recommendations via computer, about how to tailor their whole group instruction, how to configure small group teaching, how to do peer-mediated instruction, how to pair students in productive ways on which skills. And also when children are not responding well to the conventional program, we can use the data to tailor instructional decisions, and computers can actually make recommendations about how that can be done.

It's important for schools to recognize that teachers need professional development, in learning the simple mechanics of implementing a systematic objective formative assessment system, as well as professional development in learning how to understand the data and connect it productively to their instructional decision-making. And in our research, we found that teachers require a fair amount of support and that in the first year of implementing a formative assessment system, teachers are novices, and it's only really with beginning in the second year that they come to appreciate the big ideas of what they are doing and also develop greater expertise in using the data in productive ways.